REMARKS

Claims 1-55 remain for prosecution in the present application.

All application claims have been rejected on a number of bases, which will be addressed in order.

Obviousness-Type Double Patenting

A number of application claims, including independent claims 1 and 24, have been rejected for obviousness-type double patenting over Hock 6,696,123. Claim 30 is mentioned in both Sections 2 and 3 of the Office Action, so it is unclear whether it was intended to reject independent claim 32 for obviousness-type double patenting over Hock.

The Hock patent discloses and claims a method of making a plastic closure in which barrier polymer material is in the form of discrete overlapping platelets within a matrix polymer material in a liner compression molded within a closure shell. Thus, claim 1 of the Hock patent recites placing within the shell or cap interior a mold charge that includes "a blend of matrix polymer material and barrier polymer material." This mold charge is then compression molded in situ to form a liner "having said barrier polymer material in the form of discrete overlapping platelets within said matrix polymer material and the platelets are oriented essentially parallel to" the base of the closure shell. In contrast, claim 1 of the present application recites placing within the cap or shell a mold charge that includes "layers of matrix polymer material alternating with layers of barrier polymer material." The mold charge is compression molded in situ "to form a liner on said base having layers of barrier polymer material alternating with layers" of matrix polymer material. The starting "blend" of matrix and barrier polymer materials in Hock is not in any way the same as or suggestive of alternating layers of matrix and barrier polymer material in the mold charge. Furthermore, the "discrete overlapping platelets" recited in claim 1 in the Hock patent are not in any way the same as or suggestive of alternating layers of barrier and matrix polymer materials. Thus, claim 1 of the present application is in no way "obvious" over claim 1 of the Hock patent.

Likewise, independent claim 24 of the present application is in no way "obvious" over claim 17 of the Hock patent. Claim 17 of the Hock patent recites extruding a plastic mold charge "that consists essentially of a blend of matrix polymer material, barrier polymer material" and a compatibilizer. This mold charge is compression molded within a closure shell to form a liner "having said barrier polymer material dispersed as overlapping platelets within said matrix polymer material." In contrast, claim 24 of the present application recites extruding a plastic mold charge that consists essentially of "continuous layers of matrix polymer material alternating with continuous layers of barrier polymer material" and a compatibilizer. The mold charge is compression molded in situ to form a liner "having continuous layers of barrier polymer material alternating with continuous layers of matrix polymer material." The extruded mold charge of Hock claim 17, consisting essentially of a "blend" of polymer materials and compatibilizer, is not in any way suggestive of a mold charge that consists essentially of alternating continuous layers of matrix and barrier polymer materials with a compatibilizer. Furthermore, compression molding the mold charge in Hock claim 17 to form a liner in which the barrier polymer material is dispersed as overlapping platelets within the matrix polymer material is not in any way the same as or suggestive of compression molding the mold charge to form a liner having continuous layers of barrier polymer material alternating with continuous layers of matrix polymer material. Dispersed platelets are not the same as or suggestive of alternating continuous matrix and barrier polymer layers.

In the same way, independent claim 32 of the present application is not in any way suggested by or obvious in view of independent claim 30 of the Hock patent. Hock claim 30 recites forming a pellet that consists essentially of a blend of matrix polymer material, barrier polymer material and compatibilizer, and compression molding the pellet to form the barrier polymer material into discrete overlapping platelets. In contrast, independent claim 32 of the present application recites extruding a pellet that consists essentially of a multiplicity of alternating layers of matrix polymer material and barrier polymer material, and compression molding the pellet to form a liner disk in which the alternating material layers are oriented generally parallel to the disk. As already noted in detail above, the material blend in the pellet and the discrete overlapping platelets in the liner of Hock claim 30 are not the same as or suggestive of a multiplicity of alternating layers of matrix and barrier polymer material in the pellet or alternating material layers in the compression molded liner disk. Thus, claim 32 of the present application is not obvious over claim 30 of the Hock patent.

The dependent claims of the present application that have been rejected for obviousness-type double patenting over dependent claims in the Hock patent are patentable both for reasons set forth above with respect to the independent claims from which such dependent claims depend, and because of the additional novel limitations set forth therein.

In summary, the obviousness-type double patenting rejection in view of the Hock patent must be withdrawn.

Claim Rejections - 35 USC 112

The Examiner's rejection of claims 8, 12-14, 21, 25, 27-28, 30-31, 40, 44-46 and 53 is not understood and is respectfully traversed. The expressions "mixtures thereof" and "blends thereof" in the environment of Markush claims is perfectly understandable and standard claim drafting practice. Claim 8, for example, recites that the matrix polymer material is selected from the group consisting of thermoplastic elastomers, soft olefin polymers and mixtures thereof - i.e., mixtures of thermoplastic elastomers and soft olefin polymers. The scope of the claim could not be more clear. In the same way, claim 12 recites that the olefin polymer is selected from the group consisting of metallocene-made polyethylene, ethylene-propylene rubbers, ethylene copolymers and mixtures thereof - i.e., mixtures of metallocene-made polyethylene, ethylene-propylene rubbers and ethylene copolymers. The Examiner has not suggested how this standard Markush-type claim terminology allegedly is unclear.

The dependency of claim 26 has been corrected.

Claim Rejections - Prior Art

Independent Claim 1 and Dependent Claims 2-23

Independent claim 1 recites a method of making a plastic closure that includes the steps of providing a plastic cap, placing within the interior of the cap a mold charge that includes layers of matrix polymer material alternating with layers of barrier polymer material, and compression molding the mold charge to form a liner having layers of barrier polymer material alternating with layers of matrix polymer material.

Claim 1 has been rejected over the three-reference combination of Mori 4,312,824, Mehra 5,700,412 and Hundt 3,147,874.

Mori discloses a process for compression molding liners within closure shells. Thus, the Mori reference is at most cumulative to the discussion in the application text that compression molding liners in situ within a closure shell is conventional technology in and of itself. The specific materials discussed at column 4, lines 11-31 are not relevant to the subject matter of claim 1.

The Mehra patent discloses a process in which a polyolefin, a barrier polymer and a compatibilizer are blended and heated to a temperature above the melting point of the highest-melting component of the blend to form a heterogenous melt, and the heterogenous melt is then "stretched" in at least one direction (column 2, lines 8-17; column 6, lines 8-14). The "stretching" operation may be accomplished by squeezing between rollers, pressing between platens, extruding between die lips or blow molding (column 8, lines 4-8). The resulting product comprises a polyolefin matrix, the compatibilizer, and the barrier resin in the form of "regions, domains, particles or platelets, these words being used interchangeably" (column 2, lines 36-47). The "stretching" operation disclosed in Mehra is a film-type process in which constant forces are applied over a relatively long time duration to achieve a controlled shear rate in the "stretching" direction. It will be noted in particular that the forces applied to the material are parallel to the direction of material flow in the various techniques disclosed in Mehra.

There is nothing in Mehra to suggest that the particle or platelet-forming action involved in extrusion "stretching" would or could take place in a compression molding operation, and thus there is no basis for combining this reference with Mori.

Compression molding liners in situ within a closure shell results in highly variable and highly non-linear shear rates within the liner material. As disclosed in Mori, as well as in the various patents referenced in the present application text, in-situ liner compression molding is accomplished by severing a charge of extruded material, placing the charge within a preformed closure shell, and then bringing a male die element into contact with the charge material. See the discussion relative to FIG. 1 of the present application text. The charge material immediately in contact with the shell may experience little or no material flow, while other portions of the charge material will experience radical material flow over a very short time duration to the periphery of the liner being molded. In direct contrast to what is disclosed in Mehra, the forces applied to the material and the material flow are non-continuous, non-linear and non-constant, and the forces are generally perpendicular rather than parallel to the direction of material flow. Thus, it would have been anything but "obvious" to persons of ordinary skill in the art that the disclosure of the Mehra patent had or has any meaning or bearing on the art of compression molding liners in situ as disclosed in Mori.

It also is noted that the "heterogenous blend" of particles in the pellets disclosed in Mehra is not even remotely related to providing a mold charge that includes layers of matrix polymer material alternating with layers of barrier polymer material as recited in claim 1. Nor does the resulting product in Mehra have anything to do with a liner having layers of barrier polymer material alternating with layers of matrix polymer material as recited in claim 1.

It is entirely unclear what the Hundt patent has to do with the present application as claimed - i.e., a method of making a plastic closure. The Hundt patent discloses a closure in which disks of paper, PVC and polyolefin are captured within a crown closure. There is no disclosure or suggestion in Hundt that these disks of diverse materials could or should be formed by compression molding a mold charge or the like.

Dependent claims 2-23 are allowable both by reason of dependency from claim 1, which is itself allowable for reasons set forth above, and because of the additional novel limitations set forth therein.

White 5,211,974 is cited relative to some dependent claims. This patent discloses a sealing gasket for a closure, in which the gasket is a heterogeneous blend of butyl rubber and thermoplastic polymer. Various techniques for forming the gasket are disclosed, including compression molding in situ (column 2, lines 3-18; column 5, lines 16-39). There is no disclosure or suggestion of a layered structure, either in the mold charge or the final gasket.

Independent Claim 24 and Dependent Claims 25-31

Independent claim 24 recites a method of making a plastic closure that includes the steps of extruding plastic mold charge material that consists essentially of continuous layers of matrix polymer material alternating with continuous layers of barrier polymer material, and compatibilizer material. A mold charge pellet is severed from the extruded mold charge material and placed in a plastic cap. The mold charge pellet is then compression molded in situ within the cap to form a liner having continuous layers of barrier polymer material alternating with continuous layers of matrix polymer material.

Claim 24 has been rejected over the four-reference combination of Mori, Mehra, Hundt and Schrenk 5,380,479.

The Mori, Mehra and Hundt references have been discussed above. These references, considered either individually or in combination, clearly do not disclose or suggest the subject matter of claim 24 for reasons discussed in detail relative to claim 1.

The Schrenk reference discloses a technique for multiplying the layers of an extruded layer layered material. Indeed, the Schrenk patent is related to the two patents referenced at page 8, line 13 of the present application text relative to layer generation device 16 and layer multiplication device 18 in FIG. 1 of the present application. There is nothing in the Schrenk patent suggestive of compression molding barrier liners from multilayer charge pellets. Furthermore, the Schrenk patent has nothing at all to do with the Mori reference, in which both the starting material and the final product are in the form of heterogenous blends rather than alternating layers. Thus, the Schrenk patent adds nothing to Mori, Mehra and Hundt insofar as independent claim 24 is concerned.

Claims 25-31 are allowable both by reason of dependency from claim 24, which is itself allowable for reasons set forth above, and because of the additional novel limitations set forth therein.

Independent Claim 32 and Dependent Claims 33-55

Independent claim 32 recites a method of making a liner for a plastic closure, which includes the steps of extruding a pellet that consists essentially of a multiplicity of alternating layers of matrix polymer material and barrier polymer material, and compression molding the pellet to form a liner disk in which the alternating material layers are oriented generally parallel to the disk. Claim 32 has been rejected over the three-reference combination of Mori, Mehra and Hundt - i.e., the same three-reference combination discussed in detail above relative to claim 1. By way of summary, it again is noted that the heterogenous blend in the starting material in Mehra and the heterogenous blend in the final product are not the same as or anyway related to alternating layers of barrier and matrix polymer materials. Moreover, the process disclosed in Mehra is not in any way related to compression molding of liners. Furthermore, the disclosure of three disks of diverse materials in Hundt adds nothing to Mori and Mehra insofar as the method claims of the present application are concerned.

Dependent claims 33-55 are allowable both by reason of dependency from independent claim 32, which is itself allowable for reasons set forth above, and because of the additional novel limitations set forth therein.

It therefore is believed and respectfully submitted that all claims 1-55 remaining in the present application are allowable at this time, and favorable action is respectfully solicited.

Please charge any fees associated with this submission to Account No. 15-0875 (Owens-Illinois).

Respectfully submitted,

REISING, ETHINGTON, BARNES,
KISSELLE, P.C.

By______________________________
Robert C. Collins
Reg. No. 27,430
Telephone (248) 689-3500
Facsimile (248) 689-4071